

ABSTRACT OF THE DISCLOSURE

The average power output of a laser is scaled, to first order, by increasing the transverse dimension of the gain medium while increasing the thickness of an index matched light guide proportionately. Strategic facets cut at the edges of the laminated gain medium provide a method by which the pump light introduced through edges of the composite structure is trapped and passes through the gain medium repeatedly. Spontaneous emission escapes the laser volume via these facets. A multi-faceted disk geometry with grooves cut into the thickness of the gain medium is optimized to passively reject spontaneous emission generated within the laser material, which would otherwise be trapped and amplified within the high index composite disk. Such geometry allows the useful size of the laser aperture to be increased, enabling the average laser output power to be scaled.

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